

Preliminary Data Report for Stormwater Runoff Samples Collected in Pajarito Canyon at State Road 501 on September 8, 2000

A precipitation event occurred over the Jemez Mountains and the Pajarito Plateau on the afternoon of September 08, 2000. The meteorological station on Pajarito Mountain recorded a total of 0.37 inches, the TA-6 station recorded 0.21 inches, and the North Community station in northern Los Alamos recorded 0.52 inches. Remote Automated Weather Stations (RAWS) located on US Forest Service land in the Jemez Mountains recorded 0.98 inches near Garcia Canyon, 0.56 inches in Pueblo Canyon, 0.89 inches near Los Alamos Canyon and 0.58 inches in Pajarito Canyon. Figure 1 shows the pattern of precipitation that was recorded in the Jemez Mountains and on the Pajarito Plateau on September 8.

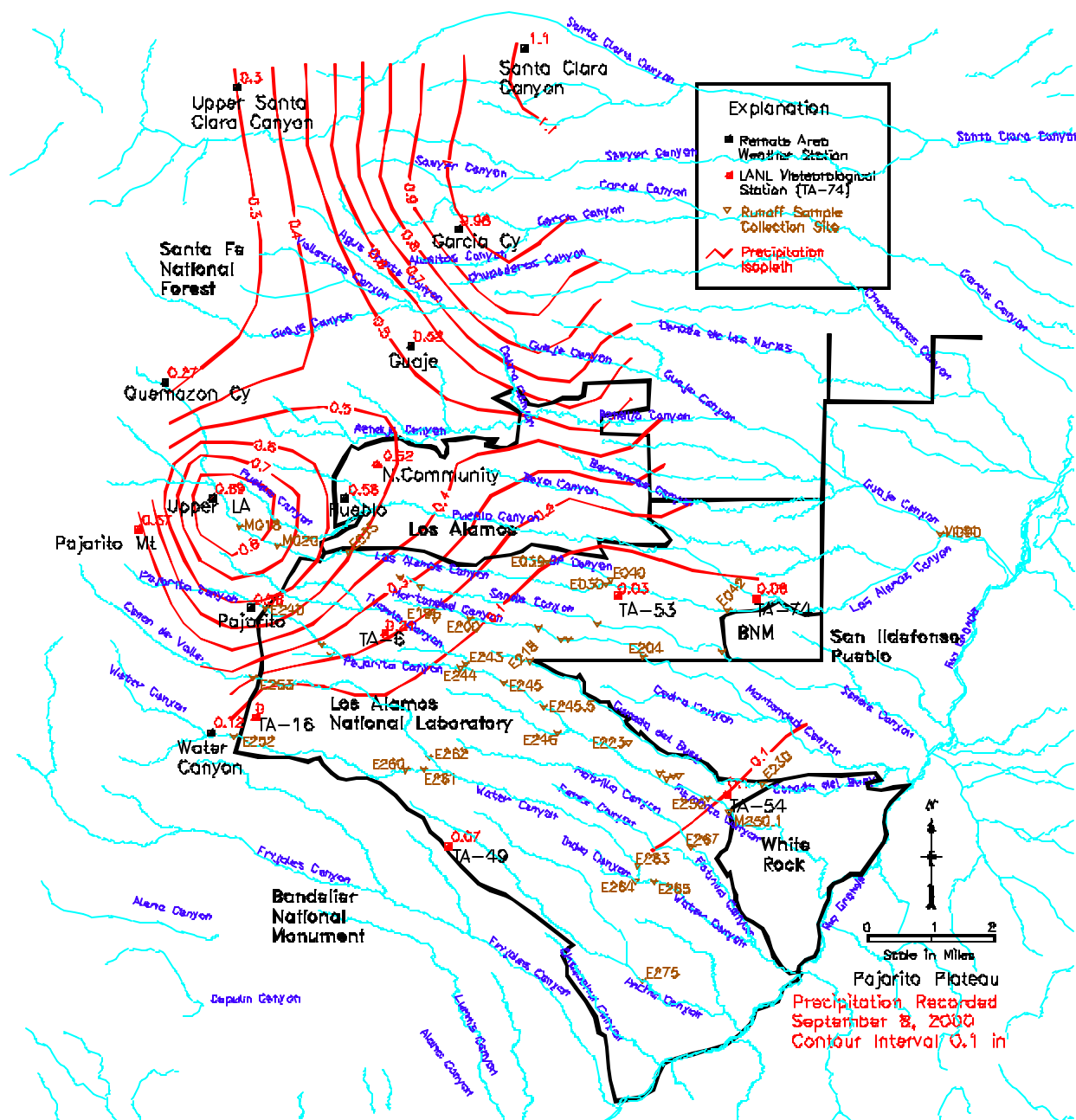


Figure 1. Precipitation recorded at meteorological station on the Pajarito Plateau on September 08, 2000

The flow event was not recorded at stream gage E240 in Pajarito Canyon because the gage had been destroyed by a previous runoff event. Personnel collecting the runoff sample noted that flow of approximately 1 cfs was present in Pajarito Canyon at SR-501 at the time of sample collection.

Manual (grab) stormwater runoff samples were collected at the site of gage E240 during the runoff event at 16:48 and 16:56 on the afternoon of September 8. Unfiltered and filtered samples were collected for analysis. The samples were sent to General Engineering Laboratories, Inc. in Charleston, South Carolina for analysis for radionuclides, metals, general inorganic constituents, VOCs, SVOCs, PCBs, HE, and Furans/Dioxins. Preliminary results of the available analyses for radionuclides are shown in Table 1. Also shown on Table 1 are the maximum values of constituents that have been recorded previous to the Cerro Grande Fire in unfiltered stormwater runoff at LANL (1995 through 1999), the DOE Public Dose Derived Concentration Guides (DCGs), and the Environmental Restoration Project's Ecological Screening Level (ESL) for water, for comparison purposes. Results of gamma spectroscopy are reported only for Cs-137 and other radionuclides that were detected in concentrations above the laboratory method detection limit.

A summary of the preliminary results of the analyses is shown in Figure 2. The results are compared with the historic maximum values obtained for unfiltered runoff and the DOE DCGs and the ESLs.

The unfiltered runoff sample collected on September 8, 2000 contained 8,200 mg/L total suspended solids (TSS). Based on this sediment concentration and the activity of radionuclides measured of the unfiltered water and the filtered water samples, the concentrations of the radionuclides in the suspended sediment fraction of the runoff samples were calculated. These calculated values are also shown on Table 1.

The background values (BVs) that have been determined for stream sediments at Los Alamos National Laboratory (Ryti et al. 1998) and the calculated residential screening level (RSL) or soil for each radionuclide are also shown on Table 1. The RSL values were derived using DOE's RESRAD code and are based on a dose limit of 10 mrem/yr, which is less than the DOE free-release dose limit of 15 mrem/yr (LANL 2000). The maximum value of radionuclide concentrations observed in ash and muck sediment samples collected in June after precipitation events by the LANL ER Project are also shown on Table 1 (LANL 2000). The BVs for stream sediments, the RSLs, and the maximum ash and muck values are provided as a comparison for the results of the calculated activities of radionuclides in the suspended sediment fraction of the runoff samples. Suspended sediments in runoff samples are typically finer-grained than stream sediment samples; some radionuclides have been found to be preferentially located in finer grained sediments so direct comparison of the suspended sediment fraction of runoff samples with stream sediment BVs may not be appropriate, but the BVs, RSLs, and maximum values of ash and muck samples are provided here for reference and comparison.

The radionuclide results obtained to date for the samples collected from Pajarito Canyon at SR-501 are below the historic pre-fire maximum values and are below DOE DCG and ESL values for each analyte result obtained to date. The calculated radionuclide concentrations in the suspended sediment fraction of the samples are below BVs for each analyte available except for Cs-137, which has a calculated value of 3.757 pCi/g, about 4 times the BV of 0.9 pCi/g. The calculated concentration of Cs-137 is below the RSL of 5.1 pCi/g and the ash and muck maximum value of 5.16 pCi/g. The calculated concentration of Th-230 was 0.894 pCi/g, which is above the RSL, but below the BV and the ash and muck maximum values.

References

Los Alamos National Laboratory (LANL), 2000, "Post-Cerro Grande Fire Environmental Sampling Data: Baseline Ash and Muck Samples," Environmental Restoration (ER) Project report LA-UR 00-4362, September 2000, ER2000-0485. Preliminary data also presented on LANL ER Web site located at <http://erproject.lanl.gov/Fire/Data/datahome.html>

Ryti, R. T., P. A. Longmire, D. E. Broxton, S. L. Reneau, and E. V. McDonald, September 1998, "Inorganic and Radionuclide Background Data for Soils, Sediments and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory Report LA-UR-98-4847. (Ryti et al. 1998, 59730)

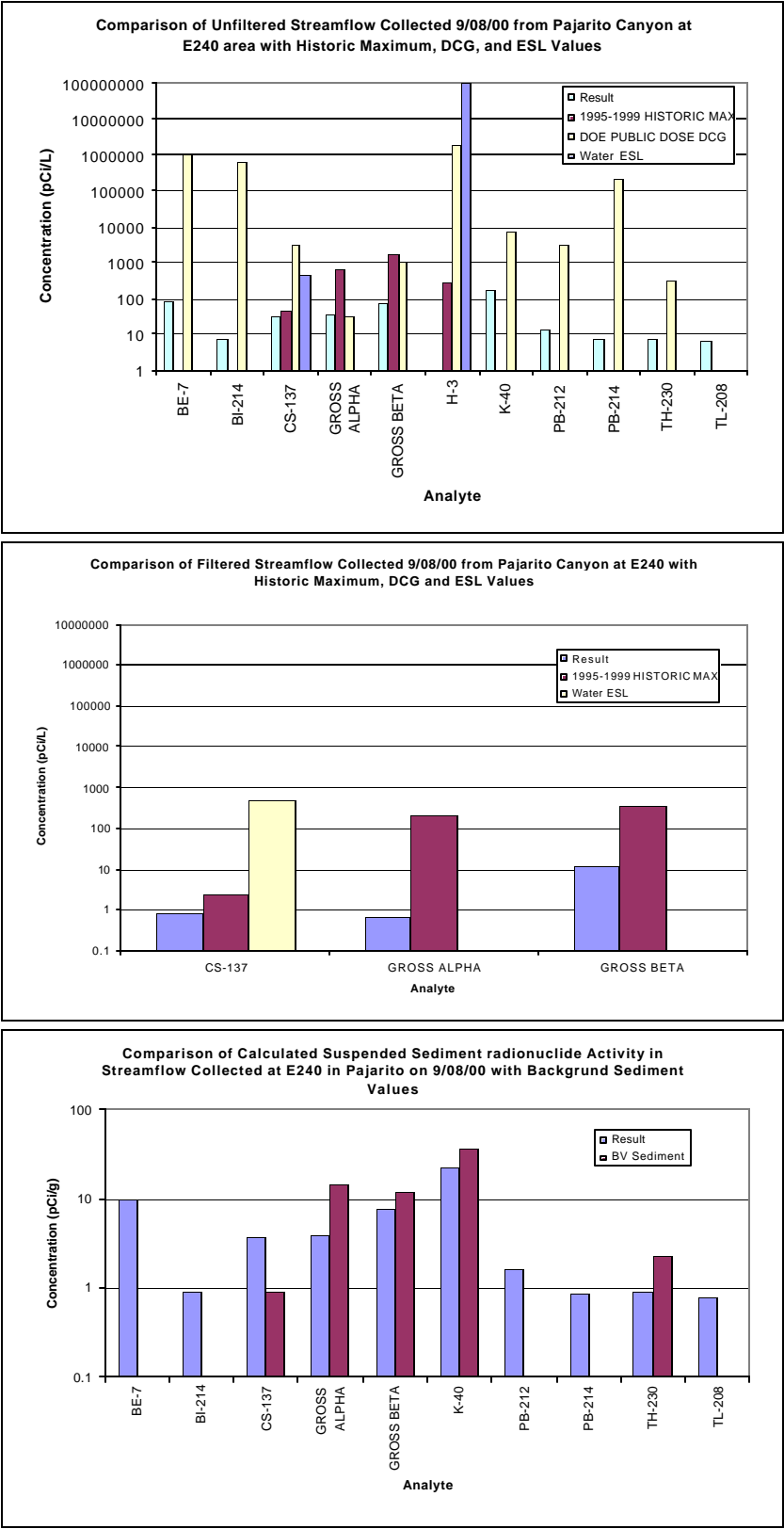


Figure 2. Comparison of runoff samples collected 9/08/00 in Pajarito Canyon at SR-501 (E240) with Historic Maximum and DCG Values